

IN THE CLAIMS

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

1. (currently amended) A storage system, which can be connected to a host computer, having:
 - a plurality of storage devices which store data from said host;
 - a plurality of housings each having a storage device from said plurality of storage devices;
 - a plurality of first power supplies which supply a voltage to said plurality of storage devices; and
 - a casing which includes said plurality of storage devices and said plurality of housings,
wherein each of said plurality of housings has a first voltage converter which receives power having a first voltage value from one of said first power supplies, converts said first voltage value into a second voltage value different from said first voltage value, and supplies power having a single voltage value to said storage device included in said each of said plurality of housings,
wherein at least one of said plurality of storage devices is a Fiber Channel (FC) storage device having a FC interface, and at least another one of said plurality of storage devices is a Serial Advanced Technology Attachment (SATA) storage device having a serial interface,
wherein said housing having a SATA storage device also includes a FC/SATA converter, and

wherein the first voltage converter, being included in said housing
having said SATA storage device, is coupled to said SATA storage device, is
coupled to and the FC/SATA converter for supplying power to the said SATA
storage device and the FC/SATA converter.

2. (original) The storage system according to Claim 1, wherein
said first voltage converter supplies power having said single voltage value to
said storage device via a single power supply line.

3. (original) The storage system according to Claim 1, wherein
said plurality of first power supplies are AC/DC power supplies, said first
voltage converter is a DC/DC converter, and said first voltage value is higher
than said single voltage value.

4. (original) The storage system according to Claim 1, wherein
said plurality of storage devices incorporate internal voltage conversion
circuits which convert power supplied by said first voltage converter and
having a single voltage value into a plurality of voltage values.

5. (original) The storage system according to Claim 4, wherein
power having one of the plurality of voltage values converted by said internal
voltage conversion circuits is used to drive magnetic storage media of said
storage devices, and power having another of said plurality of voltage values
is used to drive interface logic circuits of said storage devices.

6. (original) The storage system according to Claim 1, wherein said first voltage converter receives power having a plurality of different voltage values, and outputs power having said single voltage value.

7. (previously presented) The storage system according to Claim 1, wherein any of said plurality of housings is a first housing having a first voltage converter which receives power having the first voltage value from said first power supply, converts said first voltage value into a second voltage value different from said first voltage value, and supplies power having a single voltage value to said storage device, and
wherein any of the other of said plurality of housings is a second housing having a second voltage converter which receives power having the first voltage value from said first power supply, converts said first voltage value into a second voltage value different from said first voltage value, and supplies power having a plurality of different voltage values to said storage device.

8. (original) The storage system according to Claim 1, wherein a motherboard is positioned between said first power supplies and said housings, and said first voltage converter is connected, via said motherboard, to a power supply line connecting said storage devices.

Claims 9 and 10 (canceled).

11. (currently amended) A storage system, comprising:

a power supply circuit which outputs a single type of power having a single voltage level;

a main body having a main power supply line to transmit said single type of power output from said power supply circuit, a data transfer path for data transfer, and a plurality of pack connection sites;

a plurality of storage device packs which can receive said single type of power from said main power supply line, which are each connected to said plurality of pack connection sites on said main body so as to enable exchange of data with said data transfer path, and which can be removed from said pack connection sites;

a casing which includes said main body and said plurality of storage device packs, and

wherein each storage device pack comprises:

a physical storage device requiring the supply of one or more types of power each having a prescribed voltage level, and

a power conversion circuit which receives said single type of power from said main power supply line, converts said single type of power into said one or more types of power required by said physical storage device, and outputs said converted one or more types of power to said physical storage device,

wherein the voltage level of said single type of power from said main power supply line is equal to or higher than the highest voltage level of said one or more types of power required by said physical storage device,

wherein at least one of said physical storage devices included in said storage device packs is a Fiber Channel (FC) storage device having a FC

interface, and at least another one of said physical storage devices is a Serial Advanced Technology Attachment (SATA) storage device having a serial interface,

wherein said storage device pack having a SATA storage device also includes a FC/SATA converter, and

wherein the power conversion circuit, being included in said storage device pack having said SATA storage device, is coupled to said SATA storage device, is coupled to and the FC/SATA converter for supplying power to the said SATA storage device and the FC/SATA converter.

12. (previously presented) The storage system according to Claim 11, wherein said plurality of storage device packs connected to said pack connection sites on said main body comprise different types of storage device packs, comprising first and second types,

wherein said first type of storage device pack comprises:
a multiple-power-supply type physical storage device which requires the supply of a plurality of types of power each having a prescribed voltage level, and

a power conversion circuit which converts said single type of power from said main power supply line into the plurality of types of power required by said multiple-power-supply type physical storage device, and inputs said plurality of types of power to said multiple-power-supply type physical storage device, and

wherein said second type of storage device pack comprises:

a single-power-supply type physical storage device which requires the supply of one type of power having a prescribed voltage level, and

a power conversion circuit which converts said single type of power from said main power supply line into one type of power required by said single-power-supply type physical storage device, and inputs said single type of power to said single-power-supply type physical storage device, and each type of storage device pack can be connected to any of said plurality of pack connection sites on said main body.

13. (previously presented) The storage system according to Claim 12, wherein said single-power-supply type physical storage device within said second type of storage device pack has a plurality of power supply input terminals, and

wherein said power conversion circuit included in said second type of storage device pack inputs said one type of power to said single-power-supply type physical storage device via said plurality of power supply input terminals.

14. (previously presented) The storage system according to Claim 11, wherein said plurality of storage device packs connected to said pack connection sites on said main body comprise different types of storage device packs, comprising first and second types,

wherein said first type of storage device pack comprises:

a first type of physical storage device requiring the supply of a first type of power having a first voltage level, and

a power conversion circuit which converts said single type of power from said main power supply line into said first type of power required by said first type of physical storage device, and inputs said power to said first type of physical storage device,

wherein said second type of storage device pack comprises:

a second type of physical storage device requiring the supply of a second type of power having a second voltage level different from said first voltage level and

a power conversion circuit which converts said single type of power from said main power supply line into said second type of power required by said second type of physical storage device, and inputs said power to said second type of physical storage device,

wherein each type of storage device pack can be connected to any of said plurality of pack connection sites on said main body.

15. (previously presented) A storage system comprising:

a power supply circuit which outputs a single type of power having a single voltage level;

a main body having a main power supply line to transmit said single type of power output from said power supply circuit, a data transfer path for data transfer, and a plurality of pack connection sites; and

a plurality of storage device packs which can receive said single type of power from said main power supply line, which are each connected to said plurality of pack connection sites on said main body so as to enable exchange

of data with said data transfer path, and which can be removed from said pack connection sites,

wherein each storage device pack comprises:

a physical storage device requiring the supply of one or more types of power each having a prescribed voltage level, and

a power conversion circuit which receives said single type of power from said main power supply line, converts said single type of power into said one or more types of power required by said physical storage device units, and outputs said converted one or more types of power to said physical storage device,

wherein the voltage level of said single type of power from said main power supply line is equal to or higher than the highest voltage level of said one or more types of power required by said physical storage device,

wherein each of said plurality of pack connection sites on said main body comprises:

a U-turn power supply line to receive, and once again input to said storage device pack, said one or more types of power output from said power conversion circuit within said storage device pack,

wherein said plurality of storage device packs comprises at least one power-returning type storage device pack,

wherein said power-returning type storage device pack further has a return power supply line to return said one or more types of power output from said power conversion circuit to said U-turn power supply line, and

an input power supply line to input, to said physical storage device, said one or more types of power which are again input from said U-turn power supply line, and

wherein said power-returning type storage device pack can be connected to any of said plurality of pack connection sites on said main body.

16. (previously presented) The storage system according to Claim 15, wherein said power-returning type storage device pack comprises:

a canister which accommodates said physical storage device and said power conversion circuit;

a main connector provided in the outer face of said canister and having a power supply terminal functioning as said input power supply line and a data transfer terminal for connection of said data transfer path to said physical storage device; and

an auxiliary connector provided in the outer face of said canister and having a main power supply terminal to connect said main power supply line to said power conversion circuit, and a return power supply terminal to connect said return power supply line to said U-turn power supply line, and

wherein said physical storage device is positioned within said canister in proximity to said main connector, and is directly connected to said main connector.

17. (previously presented) A storage system comprising:

a power supply circuit which outputs a single type of power having a single voltage level;

a main body having a main power supply line to transmit said single type of power output from said power supply circuit, a data transfer path for data transfer, and a plurality of pack connection sites; and

a plurality of storage device packs which can receive said single type of power from said main power supply line, which are each connected to said plurality of pack connection sites on said main body so as to enable exchange of data with said data transfer path, and which can be removed from said pack connection sites,

wherein each storage device pack comprises:

a physical storage device requiring the supply of one or more types of power each having a prescribed voltage level, and

a power conversion circuit which receives said single type of power from said main power supply line, converts said single type of power into said one or more types of power required by said physical storage device units, and outputs said converted one or more types of power to said physical storage device,

wherein the voltage level of said single type of power from said main power supply line is equal to or higher than the highest voltage level of said one or more types of power required by said physical storage device,

wherein said data transfer path of said main body forms a first data transfer interface,

wherein said plurality of storage device packs connected to said pack connection sites on said main body comprises different types of storage device packs, comprising first and second types,

wherein said first type of storage device pack comprises:

a first type of physical storage device having said first data transfer interface, and

a power conversion circuit which converts said single type of power from said main power supply line into power required by said first type of physical storage device and inputs said power to said first type of physical storage device;

wherein said second type of storage device pack comprises:

a second type of physical storage device having a second data transfer interface separate from said first data transfer interface,

a data transfer interface conversion circuit which converts said first data transfer interface of said data transfer path of said main body into said second data transfer interface of said second type of physical storage device and provides said second data transfer interface to said second type of physical storage device, and

a power conversion circuit which converts said single type of power from said main power supply line into the power required by said second type of physical storage device and said data transfer interface conversion circuit, and inputs said power to said second type of physical storage device and said data transfer interface conversion circuit,

wherein each type of storage device pack can be connected to any of said plurality of pack connection sites on said main body.

18. (previously presented) The storage system according to
Claim 11, further comprising:

a power supply control circuit which individually controls the turning-on and turning-off of said power conversion circuits included in said plurality of storage device packs.

19. (previously presented) The storage system according to
Claim 11, further comprising:

a power supply control circuit which individually controls the output voltage levels of said power conversion circuits included in said plurality of storage device packs, according to the power supply voltage levels required by each of said physical storage devices within said plurality of storage device packs.

20. (previously presented) The storage system according to
Claim 11, wherein each physical storage device is a hard disk drive.